

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

In Re TELETECH LITIGATION

Plaintiff

Master File No. 1:08-cv-00913 (LTS)(FM)

This Documents Relates To:

CLASS ACTION

ALL ACTIONS

**DECLARATION OF SCOTT D. HAKALA, PH.D, CFA
REGARDING MARKET EFFICIENCY AND LOSS CAUSATION**

I. Background and Qualifications of the Expert

1. I am a director of CBIZ Valuation Group, LLC, a national business valuation and consulting firm that operates as a wholly owned subsidiary of CBIZ, Inc., a publicly traded business services firm (NYSE: CBZ). CBIZ Valuation Group is one of the largest business valuation and consulting firms in the United States with offices in Dallas, Chicago, Atlanta, Milwaukee, St. Louis and Princeton (New Jersey). CBIZ Valuation Group employs approximately 100 individuals providing business valuation services to public and private companies.

2. I received a Doctor of Philosophy degree in Economics and a Bachelor's degree in Economics from the University of Minnesota. I have earned the professional designation of Chartered Financial Analyst, awarded by the Association for Investment Management and Research. I have taught courses on asset pricing and market efficiency at the doctorate (Ph.D.) level in a Ph.D. granting institution. I co-authored a law review

article on the economics of loss causation, Thorsen, Kaplan and Hakala, “Rediscovering the Economics of Loss Causation,” *Journal of Business and Security Law Acceptance*, Vol. 6, No. 1 and 2, April 2006, pp. 93-125, cited, for example, in *In re Motorola Securities Litigation*, 2007 U.S. Dist. LEXIS 9530 (Northern District of Illinois; February 8, 2007). In addition, I have served as a consultant and expert witness on numerous occasions regarding economic issues similar to those in this litigation. There are a number of examples of cases where my testimony regarding market efficiency and loss causation was considered by courts at the class certification stage.¹ I have testified as to the issues set forth in this declaration regarding market efficiency and loss causation in two trials, *In re Clarent Securities Litigation* (February 2005) and *In re JDS Uniphase Securities Litigation* (November 2007). Additionally, I have been found qualified over objections to testify as to these issues in a number of instances over the past five years.² Finally, I have performed analyses of loss causation for plans of allocations associated with settlements for plaintiffs and for the Securities and Exchange Commission on numerous occasions and have had plans of allocation approved by courts over objections

¹ See, for example, *Wagner v. Barrick Gold et al.*, 2008 U.S. Dist. LEXIS 15811 (S.D. N.Y., Feb. 15, 2008); *In re Flag Telecom Ltd. Holdings Sec. Litig.*, 2007 U.S. Dist. LEXIS 67173 (S.D. N.Y., Sept. 4, 2007); *Lapin v. Goldman Sachs*, 2008 U.S. Dist. LEXIS 69574, (S.D. N.Y., Sept. 15, 2008); *In re Parmalat Sec. Litig.*, 2008 U.S. Dist. LEXIS 64296, (S.D. N.Y., Aug. 21, 2008); *In re Nature's Sunshine Product's Inc. Sec. Litig.*, 251 F.R.D. 656; 2008 U.S. Dist. LEXIS 73790 (D. Utah, Sept. 25, 2008); *Connecticut Retirement Plans and Trust Funds v. Amgen, Inc.*, 2009 U.S. Dist. LEXIS 71653 (C.D. Cal., Aug. 12, 2009); and *In re Herley Sec. Litig.*, 2009 U.S. Dist. LEXIS 91600 (E.D. Penn., Sep. 30, 2009).

² See, for example, *In re Scientific Atlanta Sec. Litig.*, Civil Action No. 1:01-CV-1950-RWS (N.D. Ga., Nov. 24, 2009); *Shirk v. Fifth Third Bancorp*, Case No. 05-cv-49 (S.D. Ohio; Jan. 29, 2009), Memorandum Opinion and Order, p. 12; *In re JDS Uniphase Securities Litigation*, Master File No. C-02-1486 CW (EDL) (N.D. Cal.; 10/9/2007), Minute Order, see, also, trial transcript on Nov. 1 and 2, 2007 allowing testimony and limiting cross-examination to subject of testimony; *In re Omnicom Group, Inc. Sec. Litig.*, Case No. 02 Civ. 4483, (S.D.N.Y.; Aug. 24, 2007), Transcript of Proceedings, pp. 28-33; *In re: Metris Companies Inc. Securities Litigation*, Civil No.: 02-3677, (D. Minn.; Nov. 8, 2005), Transcript of Proceedings, p. 44; *In re: Clarent Corporation Securities Litigation*, Master File No. C-0103361CRB(JCS), (N.D. Cal.; Jan. 31, 2005), Transcript of Jury Trial-Daubert Hearing, pp. 725-726 and 752-6; and *In re Raytheon Company Securities Litigation*, Civil Action No. 99-12142 (PBS), (D. Mass.; May 18, 2004); Transcript of Proceedings, p. 32:14.

in a number of cases.³ A detailed summary of my qualifications, including prior testimony and articles, is provided on the curriculum vitae attached hereto as Exhibit A.

3. Plaintiffs are being charged fees for my services in this engagement based on my hourly billing rate \$575 per hour. I have received assistance from other staff employed by CBIZ Valuation Group.

II. Information Considered

4. My opinions are based on my professional experience, as well as a thorough review of a substantial amount of available materials, including:

- (a) The Consolidated Amended Complaint (“Complaint”) for Violations of the Federal Securities Laws in this matter dated September 2, 2008;
- (b) Securities filings of TeleTech Holdings Inc. with the Securities and Exchange Commission (“SEC”) from December 2005 through December 2008;
- (c) Published news articles, press releases and other public news regarding TeleTech Holdings Inc., from October 2005 through June 2009 found on Factiva, LexisNexis and Bloomberg, L.P.;
- (d) Various published analysts’ reports as found on Thomson Research from November 2005 through July 2009;
- (e) Publicly available financial information and public trading price information on TeleTech Holdings Inc., market indices and similar public companies as found on Bloomberg, L.P.; and

³ See, for example, *In re Broadcom Corp. Sec. Litig.*, 2005 U.S. Dist. LEXIS 41976 (C.D. Cal.; Sep. 12, 2005); *In re i2 Technologies Sec. Litig.*, No. 3:01-CV-418-H (N.D. Texas); *In re Patriot American Hospitality Sec. Litig.*, 2005 WL 3801595 (N.D. California; November 30, 2005) (citing my event study); *In re Williams Cos. Sec. Litig.*, Case No. 02-cv-72-SFP (FHM) (N.D. Oklahoma; February 9, 2007) and *In re AOL Time Warner Sec. Litig.*, 2006 WL 903236 (S. D. New York; April 6, 2006) (citing my event study).

(f) Various academic texts and published articles as cited in the text.

III. Summary of the Analyses and Conclusions

5. I was asked by counsel for the Plaintiff to analyze the trading of TeleTech's shares during the proposed Class Period from October 25, 2006, through July 16, 2008 (the "Class Period") to determine whether the market for TeleTech's shares was informationally efficient and whether a method for establishing materiality and causation for assessing per share damages on a class-wide basis could be constructed in light of the allegations in the Complaint and the efficiency of the market.

6. In assessing the type of market efficiency required for the fraud-on-the-market presumption, I considered whether the shares of TeleTech were traded in an informationally efficient market.⁴ In addressing the factors outlined in *Cammer v. Bloom*, 711 F. Supp. 1264 (D. NJ; 1989), I found strong evidence for the level of market efficiency required for class certification. I found no evidence of an undeveloped or inefficient market with respect to the trading of the common shares of TeleTech.

(a) There was more than adequate trading volume, public float (shares available to trade and not held by affiliates of the Company) and market value to attract substantial investor interest and to ensure market efficiency. The total value of shares held by non-affiliates was \$381.9 million as of June 30, 2006, \$1,204.7 million as of June 30, 2007, and \$776.2 million as of June 30, 2008.⁵ This implied shares in the public float in excess of 30 million at the beginning of the

⁴ A good summary of the practical concept of market efficiency consistent with my understanding is set forth in Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, Second Edition, 2002, pp. 112-116. See, also, *In re Xcelera.com Securities Litigation* (U.S. First Circuit Court of Appeals, opinion December 13, 2005).

⁵ As stated in the Form 10-K's filed by the Company for the years ending December 31, 2006, 2007, and 2008, respectively.

Class Period and in excess of 37 million by June 30, 2007 and in excess of 38 million by June 30, 2008. The trading volume (average of 801,380 shares per day) and price information is summarized in Exhibit B. The trading fundamentals and reasonably high turnover of the public float led to substantial analyst coverage during the proposed Class Period from October 25, 2006, through July 16, 2008. This led to a very low bid-ask spread, making trading in the Company's shares relatively inexpensive.⁶

- (b) Institutional investors held a majority of the shares outstanding as shown in Exhibit C. The large number of institutional investors that held and traded TeleTech's shares over time plus the large number of shareholders of record and beneficial holders of TeleTech shares meant the numerous non-affiliated investors purchased shares within the Class Period and were regularly monitoring and trading TeleTech's shares, consistent with an informationally efficient market.
- (c) The fact that TeleTech's shares were in good standing and actively traded on the NASDAQ National and Global Select Market throughout the Class Period is, by itself, usually sufficient to conclude that the market for its shares was reasonably efficient.
- (d) TeleTech issued regular press releases and information regarding its earnings (including holding conference calls to discuss its results), guidance and

⁶ The median closing average bid-ask spread was \$.020 per share or 0.094% of the mid-price quote at the end of each day as provided by Bloomberg, L.P. Since the average bid-ask spread typically overstates the difference between the best bid and best ask, this represents an upper bound on the average trading cost. By NASDAQ standards, this is considered a relatively low average bid-ask spread.

commercial developments. TeleTech was in good standing and, consequently, able to conduct secondary offerings (issuance of S-1's) during the Class Period.⁷

(e) Finally, there is a "cause and effect relationship" between unexpected corporate events and financial releases and movements in the security price, as shown in Exhibits D. The statistical tests demonstrate that Teletech's share price moved significantly more in relative terms on trade days with material news events as compared with trade days with no identified news events during the Class Period.⁸ For example, Teletech's share price fell 9.6% in absolute terms and 8.8% in relative terms (Exhibit D, event 102) on November 9, 2007. Even more significantly, Teletech's share price fell 25.9% in absolute terms and 26.2% in relative terms (Exhibit D, event 149) on July 17, 2008, at the end of the Class Period. These stock price declines were both extremely significant (absolute t-statistics of 5.38 and 13.62, respectively, for the stock price declines on November 9, 2007 and July 17, 2008 as compared with t-statistic thresholds of 1.65 for statistical significance and 3.00 for extremely significant). Despite the significance of the stock price movements on November 9, 2007 and July 17, 2008, Teletech's share price did not move significantly on the following days (November 10, 2007 and July 18, 2007). Other statistical test confirm that the reaction of Teletech's share price to relevant news was, therefore, rapid (with all or nearly all the price impact associated with key news events observed within one day of trading). Additionally, consistent with a highly informationally

⁷ This included the sale of 5.0 million shares held by insiders in a secondary offering in March 2007.

⁸ This is shown on page one of Exhibit D in the reported F-test ($F(100,330)=7.47$ with significance of 0.00%, implying confidence of 99.99% that events caused significant changes in Teletech's relative share price during the Class Period).

efficient market, market and industry news events were rapidly incorporated in the stock price of Teletech over time throughout the Class Period.⁹

IV. Further Analysis

7. Trading volume and price information is provided in Exhibit B. The average daily trading volume during the Class Period was 801,380 shares traded. This represents daily trading volume greater than 1.1% of the average of the total shares outstanding during the Class Period and greater than 5.0% weekly gross turnover.¹⁰ Additionally, given the substantially lower number of shares in the public float, the average and median turnover of shares was far greater. This rate of turnover is significant and indicative of an actively traded security. Additionally, the trade volume increased substantially on the days of or immediately following major material news events such as the specific announcements regarding earnings disclosures on October 26, 2006 (positive earnings news led to an increase in trading to 5,511,220 shares on that day), February 8, 2007 (positive earnings led to an increase in trading to 3,790,714 shares on that day), November 9, 2007 (disclosure of preliminary results for the third quarter of 2007 and announcement of investigation into past stock option accounting practices led to an increase in trading to 4,135,791 shares on that day), and July 17, 2008 (disclosure of earnings results and restatement of expenses associated with improper accounting for stock option backdating led to an increase in trading to 11,665,719 shares on that day).

⁹ This is shown in the F-test for the market and industry indices and the statistical significance of the three indices provided in both the market and industry and the market, industry, and event regressions reported on page one of Exhibit D. These tests establish near statistical certainty that Teletech's share price moved contemporaneously and significantly in response to market and industry events in an informationally efficient manner.

¹⁰ Daily share trading data is from Bloomberg Professional Services. Average shares outstanding data and public float information was derived from Form 10-K's, Form 10-Q's and Form Def 14A filings by the Company immediately before, during and in the quarters following the Class Period.

There was a demonstrated ability to short the stock during the Class Period and the short interest changed from month-to-month over time.

8. The public float (shares held by non-affiliates) increased during the Class Period from approximately 30 million shares to greater than 38 million shares, including the sale of 5.0 million shares into the float in connection with a secondary offering in march 2007. From my experience when advising clients with respect to IPOs and other common stock registrations, as a general rule, a public float of at least 2 million shares with a total market value of the float in excess of \$20 million is considered sufficient to attract adequate market-maker and institutional interest and a market value of the float in excess of \$50 million will attract full interest on the part of brokerage firms and market makers.

9. Approximately 344 identified institutional investors owned TeleTech shares during the Class Period with the number of institutions holding shares at the end of each quarter ranging from 157 to 203 during the Class Period. Identified institutional investors consistently held most of the shares in the public float, in excess of 30 million shares at all times during the Class Period. Institutional investors tend to be more sophisticated investors and diligent with their investment decisions. A high level of ownership of TeleTech stock among large institutional investors is an indicator of a liquid market where shares were purchased following substantial research. These factors lend themselves strongly to an inference of market efficiency.

10. The trading fundamentals and reasonably high turnover of the public float led to substantial analyst coverage during the proposed Class Period. I identified a number of analysts covering TeleTech during the Class Period, including (but not limited to):

Merrill Lynch Research; Morgan Stanley; RBC Capital Markets; Wells Fargo Securities; CITI; Craig Hallum Capital; and various other groups.

Event Study Analysis

11. Materiality is often assessed in the context of an event study. An event study is based on a market model. A market model is a model of how the price of a security (in this case, the price of TeleTech's publicly traded common shares) moves in relation to a market index and/or an index of peer group companies and responds to news and information.

12. The event study that I conducted in this case is composed of three stages. The first stage of my event study was the identification of material events. I considered primarily the period from October 31, 2005 to June 8, 2009 (the "Study Period") in the news search.¹¹ The method of identifying company-specific news events in advance and on economic grounds and controlling for such events has been repeatedly published in the academic literature and recognized as a legitimate step and improvement in analyzing the movements of stock prices (estimating the market models used in event studies) over time.¹² The intent of this step of the event study analysis was to control for all days when

¹¹ This period was chosen to include the entire Class Period and extended to the over one year before and one year after the Class Period. This focused the study on the events of interest and was sufficient in length to allow for meaningful statistical analyses, but not so long as to include less comparable time periods in the study.

¹² See, e.g., Roll, "R²," *Journal of Finance*, Vol. 43:3, July 1988, pp. 541-566 (identified and controlled for all company-specific news events identified in *Dow Jones* news and *Wall Street Journal* databases for 96 large public companies); Thompson, Olsen and Dietrich, "Attributes of News About Firms: An Analysis of Firm-Specific News Reported in the *Wall Street Journal* Index," *Journal of Accounting Research*, Vol. 25:2, Autumn 1987, pp. 245-274; Thompson, Olsen, and Dietrich, "The Influence of Estimation Period News Events on Standard Market Model Prediction Errors," *The Accounting Review*, Vol. 63:3, July 1988, pp. 448-471; Ryan and Taffler, "Are Economically Significant Stock Returns and Trading Volumes Driven by Firm-specific News Releases?" *Journal of Business Finance and Accounting*, Vol. 31:1, Jan./Mar. 2004, pp. 49-82; Franses, *Time Series Models for Business and Economic Forecasting*, 1998, Ch. 6; Jackson, Kline and Skinner, "The Impact of Non-Normality and Misspecification on Merger Event Studies," *International Journal of the Economics of Business*, Vol. 13:2,

potentially material information came into the market.¹³ The available public information was reviewed to determine information that investors would find to be material to TeleTech on a qualitative basis.¹⁴ This information included analyst reports, press releases, securities filings,¹⁵ and news articles (newspapers and daily publications, as well as more general publications). This component of the event study was compiled through a “blind” data selection process, meaning that the information likely to be new and material was selected for inclusion in the study without access to or reference to the actual stock price reaction on the corresponding dates. As a natural consequence of this, as with any, truly “blind” data selection process, there are certain dates on which

July 2006, pp. 247-264; and Aktas, de Bodt and Cousin, “Event Studies with a Contaminated Estimation Period,” *Journal of Corporate Finance*, Vol. 13, 2007, p. 130 (describes identifying and controlling for identified news events a “natural solution”).

¹³ The prominence and activities of TeleTech meant that many trade days were associated with potentially material information. As long as there are sufficient degrees of freedom (sufficient trade days with no contaminating news events), the addition of more events (over-identification of events) will ensure a set of “clean” observations in the control sample of “non-event days” and avoid contaminating the market model estimates. Thus, adding “too many” events ensures the relative absence of bias and ensures consistency of the estimates but at some slight loss of efficiency. I have performed numerous statistical analyses demonstrating the importance of this issue in improving the overall efficiency and reliability of event study analyses. See, for example, Intriligator, *Econometric Models, Techniques, and Applications*, 1978, pp. 188-189, and Pindyck and Rubinfeld, *Econometric Models and Economic Forecasts*, 1991, pp. 162-166.

¹⁴ The list of material items relied upon is based on the NASDAQ guidelines as recognized by the SEC in *Federal Register*, Vol. 67, No. 157, Aug. 7, 2002, pp. 51306-51310. We then added third party news and reports, and analyst reports to that list consistent with the academic studies. The dates identified as having potentially material news events and, therefore, associated with indicator variables are listed in Exhibit B. See, also, Ryan and Taffler, “Are Economically Significant Stock Returns and Trading Volumes Driven by Firm-specific News Releases?” *Journal of Business Finance & Accounting*, Vol. 31(1) & (2), Jan./Mar. 2004, pp. 49-82, particularly the Appendix: “Description of the News Categories Driving Price and Trading Volume Activity.” The Ryan and Taffler paper incorporates the prior work of Roll, “ R^2 ,” *Journal of Finance*, Vol. 43:3, July 1988, pp. 541-566 (identified and controlled for all company-specific news events identified in *Dow Jones* news and *Wall Street Journal* databases for 96 large public companies) and Thompson, Olsen and Dietrich, “Attributes of News About Firms: An Analysis of Firm-Specific News Reported in the *Wall Street Journal* Index,” *Journal of Accounting Research*, Vol. 25:2, Autumn 1987, pp. 245-274. Not all SEC filings were listed as potential events. Only those SEC filings otherwise discussed by analysts and in news reports were specifically included in the list of identified events. The dates identified as having potentially material news events and, therefore, associated with indicator variables are listed in the event study summary in Exhibit C-1.

¹⁵ Most securities filings, including Form 10-Ks and 10-Qs and 8-Ks, are routine and/or duplicate previously disclosed news. Thus, only when a news article or analyst mentions something surprising or new in such filings are they customarily identified as possible events for the purposes of this study.

TeleTech's stock price moved in a significant manner, but which do not appear to be correlated to identified news events for that day. Similarly, many identified potentially material dates will not lead to significant relative stock price movements (either because the news on those dates was mixed, the news was already anticipated, or the news did not otherwise significantly alter the consensus of investors) but may lead to increased trading volume and the news may, nevertheless, be considered material.¹⁶

13. The second stage of the event study involved the identification and analysis of possible market indices and guideline or peer group companies relative to the returns of TeleTech's shares. The purpose of this stage of the study is to control for the movements in TeleTech's share price that can be explained by the movements in the market and industry share prices of other companies and to isolate the effect of each event on the share price of TeleTech.

14. The third stage of the analysis involved analyzing the candidate events (identified in stage one) in an integrated event study regression that explicitly corrected for changes in volatility during various time periods over the study period in this case. I used the integrated regression, or event parameter, approach.¹⁷ This approach was selected

¹⁶ An event may be material even if it does not move the share price significantly by considering the reaction of investors if the event had not occurred in the time period expected or the movement in the stock price if an alternative event had occurred. For example, the filing of an audit opinion in connection with a Form 10-K filing with the SEC may not move the stock price but is always material to investors because it is customarily required for continued listing on an exchange or market for the stock and provides certain assurances to investors. The materiality can be seen in numerous event studies that have shown that the unexpected failure to file a timely audit opinion and/or publication of an unexpected audit opinion that disagrees with or materially alters the financial information previously disclosed by management will, with very few exceptions, cause a significant stock price movement and induce increased trading volume.

¹⁷ The primary basis for this framework was provided for in Box and Tiao, "Intervention Analysis with Applications to Economic and Environmental Problems," *Journal of the American Statistical Association*, Mar. 1975, pp. 70-79. They state (p. 78), "In practice, it is perhaps more often the case that a response at a given point of time depends on events, both known and unknown, which have occurred not necessarily coincidentally but over the recent past. Statistical methods have, in a word, 'lacked memory.' The

because the older “two-pass” cumulative abnormal returns (“CAR”) approach to event studies can often be a biased and inconsistent approach to analyzing events.¹⁸ The

dynamic characteristics of both the transfer function and the noise parts of the model have tended to be ignored. The application of time series methods can amend this situation.” It can be shown mathematically, and I have demonstrated in a series of Monte Carlo simulations by testing, that in creating a precise, reliable market model required for a single-company event study, one should account for the effects of all potentially material company-specific news events during the study period, even news unrelated to the subject of interest and even if some of the identified events do not cause a significant relative stock price movement. *See, for example*, Jackson, Kline and Skinner, “The Impact of Non-Normality and Misspecification on Merger Event Studies,” *International Journal of the Economics of Business*, Vol. 13:2, July 2006, pp. 247-264; and Aktas, de Bodt and Cousin, “Event Studies with a Contaminated Estimation Period,” *Journal of Corporate Finance*, Vol. 13, 2007, pp. 129-145. *See, also*, Thompson, Olsen, and Dietrich, “The Influence of Estimation Period News Events on Standard Market Model Prediction Errors,” *The Accounting Review*, Vol. 63:3, July 1988, pp. 448-471, and Franses, *Time Series Models for Business and Economic Forecasting*, 1998, Ch. 6 (p. 144, “With *a priori* knowledge of specific events and approximate dates which may yield aberrant observations (...), it is not difficult to examine their relevance for a model that will be used for forecasting. We can simply extend our model with additional regressors, such as the dummy variables.”).

Many academic articles discuss the use of dummy/indicator variables to capture the effects of events including: Larcker, Gordon and Pinches, “Testing for Market Efficiency: A Comparison of the Cumulative Average Residual Methodology and Intervention Analysis,” *Journal of Financial and Quantitative Analysis*, June 1980, pp. 267-287; Binder, “Measuring the Effects of Regulation with Stock Price Data,” *The RAND Journal of Economics*, Summer 1985, pp. 167-183; Karafiath, “Using Dummy Variables in the Event Methodology,” *The Financial Review*, August 1988, pp. 351-358; Malatesta, “Measuring Abnormal Performance: The Event Parameter Approach Using Joint Generalized Least Squares,” *Journal of Financial and Quantitative Analysis*, March 1986, pp. 27-38; Marais and Schipper, “Chapter 17A: Event Study Methods: Detecting and Measuring the Security Price Effects of Disclosures and Interventions,” *Litigation Services Handbook: The Role of the Financial Expert*, Third Edition, 2005 Cumulative Supplement, pp. 17A:15-16, 18, 22-23 (discusses the “event parameter” method, the use of the method to accommodate multiple events and in managing more complex modeling issues); and Dufour, “Dummy Variables and Predictive Tests for Structural Change,” *Economics Letters*, 6, 1980, pp. 241-247. (Marais has served as a consultant and co-expert in two securities cases in the past year in both testing and validating my methodology.) Examples in textbooks discussing using dummy/indicator variables to capture events in time include: Box, Jenkins, and Reinsel, *Time Series Analysis: Forecasting and Control*, (4th ed.), 2008; Pena, Tiao, and Tsay, *A Course in Time Series Analysis*, 2000; Montgomery, Jennings and Kulahci, *Introduction to Time Series Analysis and Forecasting*, 2008; Yaffee, *An Introduction to Time Series Analysis and Forecasting: with Applications of SAS and SPSS*, 2000; Brockwell and Davis, *Introduction to Time Series and Forecasting*, 2003; McDowall, McCleary, Meidinger, Hay, *Interrupted Time Series Analysis*, 1980; Pindyck & Rubinfeld, *Econometric Models & Economic Forecasts*, 1991, pp. 104-108; Intriligator, *Econometric Models, Techniques, and Applications*, 1978, pp. 58-61, and Campbell, Lo and MacKinlay, *The Econometrics of Financial Markets*, 1997, p. 167.

¹⁸ The traditional CAR analysis fails to control for company-specific news and, thus, provides a misspecified test in that it consistently fails to control for the factor it seeks to test and, thus, improperly formulates the hypothesis test, especially in a single company event study analysis. *See, for example*, Jackson, Kline and Skinner, “The Impact of Non-Normality and Misspecification on Merger Event Studies,” *International Journal of the Economics of Business*, Vol. 13:2, July 2006, pp. 247-264; Aktas, de Bodt and Cousin, “Event Studies with a Contaminated Estimation Period,” *Journal of Corporate Finance*, Vol. 13, 2007, pp. 129-145; Nimalendran, “Estimating the Effects of Information Surprises and Trading on Stock Returns Using a Mixed Jump-Diffusion Model,” *Review of Financial Studies*, Fall 1994, pp. 451-

integrated regression approach yields consistent and unbiased estimates of both the market model and the effects of events over the period of interest.¹⁹ After identifying all

469; and Higgins and Peterson, "Power of One and Two Sample T-Statistics Given Event-Induced Variance Increases and Non-normal Stock Returns: A Comparative Study," *Quarterly Journal of Business and Economics*, Vol. 37, Winter 1998, pp. 27-49. In the academic literature, this misspecification and bias issue is partially addressed, or minimized, by studying the same types of events across a large sample of companies. However, in a single-company event study, such as is required in securities litigation, that approach cannot be employed.

There is substantial general and specific literature in the statistics, economics and finance fields discussing the problems that can arise in the traditional two-pass CAR methodology. *See, for example*, Larcker, Gordon and Pinches, "Testing for Market Efficiency: A Comparison of the Cumulative Average Residual Methodology and Intervention Analysis," *Journal of Financial and Quantitative Analysis*, June 1980, pp. 267-287. The authors in this paper state (p. 267), "The objective of this paper is to suggest that the traditional CAR methodology is often inappropriate and that *intervention analysis* [italics in original] is a possible alternative. Where the systematic risk (i.e. Beta) of a firm change as the result (or in anticipation) of an announcement, the cumulative average residual methodology will result in biased residuals. ...Intervention analysis, on the other hand, can separate such risk changes from the information content of the announcement. In addition, intervention analysis also allows the observed auto-correlation in the market model residuals to be removed, thus providing improved beta estimates required for reliable statistical testing." Franses in *Time Series Models for Business and Economic Forecasting*, 1998, similarly recommends "intervention" analysis (p. 130) consistent with Box and Tiao (1975) and points out the statistical problems that arise when one does not capture the effects of known events (with dummy variables) or "neglects them" (pp. 128-129).

The bias and inconsistency problems associated with the two-pass or CAR event analyses are particularly significant in single company event studies and can be proven through mathematical derivation and simulation testing, as provided for in an unpublished working paper I have recently written. First, the "clean period" required to obtain estimates of the standard errors and the coefficients of the market model in the CAR methodology is almost never really clean in a statistical sense. Clean in a statistical sense implies few or no significant company-specific events and a properly specified market model. Because company-specific events are common in stock price return data, the residuals during the candidate "clean period" are usually not normally distributed (fat tails or kurtosis is common) and the estimated market model is biased and inconsistent due to an *omitted variables problem*. These problems lead to overstated standard errors and understated t-statistics during the event analysis stage of the two-pass methodology. *See, for example*, Jackson, Kline and Skinner, "The Impact of Non-Normality and Misspecification on Merger Event Studies," *International Journal of the Economics of Business*, Vol. 13:2, July 2006, pp. 247-264; Aktas, de Bodt and Cousin, "Event Studies with a Contaminated Estimation Period," *Journal of Corporate Finance*, Vol. 13, 2007, pp. 129-145; and Nimalendran, "Estimating the Effects of Information Surprises and Trading on Stock Returns Using a Mixed Jump-Diffusion Model," *Review of Financial Studies*, Fall 1994, pp. 451-469. Additionally, fundamental changes in the businesses of a company and its peer companies over time can render the market model coefficients in the "clean period" inapplicable to or biased relevant to the estimation period. (*See, for example*, Marais and Schipper, "Chapter 17A: Event Study Methods: Detecting and Measuring the Security Price Effects of Disclosures and Interventions," *Litigation Services Handbook: The Role of the Financial Expert*, Third Edition, 2005 Cumulative Supplement, pp. 17A:16-21, wherein they discuss the problem of low "power" in single company event studies and the problem of "interventions" in the estimation period yielding "unstable results").

¹⁹ See the references and discussions in the two prior footnotes.

candidate events, the measured effect of each candidate event is analyzed in the context of daily returns.

15. The event study summarized in Exhibit D is based on the returns generated by TeleTech's shares on a daily basis from October 26, 2005 through July 16, 2009 (the "Study Period"). Specific event analyses focusing on the Class Period were also considered and certain tests were reported for the Class Period events only. The analysis of the industry and market forces involves the identification and analysis of possible market indices and guideline or peer group companies relative to the returns of TeleTech's shares. The market model portion of the analysis is based on the NASDAQ Industrial Index (CIND), an industry index based on the Standard & Poor's Small Cap Data Processing & Outsourced Services Index (SGDPOS), and a peer company index based on six companies in the data processing and outsourcing industry comprised of an equally-weighted geometric returns index (SUBINDEX) from the share prices of APAC Customer Services Inc. (APAC), Sykes Enterprises, Incorporated (SYKE), Acxiom Corporation (ACXM), ICT Group Inc. (ICTG), Convergys Corporation (CVG) and Computer Sciences Corporation (CSC). Collectively, the market, industry and peer company indices could explain 35.9% of the daily variance in TeleTech's stock price returns of all days during the study period and 53.1% of the variance for those days when no events were identified. Incorporating the identified Company-specific events, the percentage of the variance explained by the regression analysis increased to 73.4% in the event analysis (66.5% adjusted for the number of indices and the events included). This is considered an excellent goodness of fit for the subject time period and for common stocks in general. Focusing on the period from October 26, 2006 through July 18, 2008,

the Class Period plus the two days following the Class Period, the analysis was able to explain 75.6% of the variance in Teletech's share price over time on an unadjusted basis and 68.0% of the variance on an adjusted basis.

16. A Composite Index was constructed to isolate and distinguish the share price movements caused by Company-specific news from movements caused by market and industry news. The Composite Index has three components, one based on broad US stock indices (the market component), one based on an industry index, and another based on the stock prices and returns provided by the six companies in the same or similar industries as TeleTech (the peer group). The estimated coefficients for the indices (CIND, S6DPOS, and SUBINDEX) were combined with the indices to form a single Composite Index for analytical purposes. The Composite Index is shown in Exhibit C. The percentage change in the Composite Index on a given day represents prediction of the percentage movement in the share price of TeleTech on that day assuming no Company-specific news in the period from October 26, 2005 through July 16, 2008. Thus, on any given day, the percentage change in the Composite Index predicts the expected ("normal") percentage change in TeleTech's share price. The "abnormal return" is the difference between the return realized by TeleTech shareholders during a period of time (a day or an extended number of days) and the return predicted by the Composite Index over the same period of time.

17. The regressions summarized in Exhibit D were based on the daily returns in natural log format. The t-statistics reported for the industry and market indices are from the regression outputs in Exhibit D. In Exhibit D, the t-statistics were based on the regression outputs after taking into account the constant term in Exhibit D. Jointly and

individually, the industry indices and the market index were significant at greater than the 99.9% confidence level in explaining the returns of TeleTech. This is an excellent fit and strongly indicative of market efficiency.

18. The event effects are summarized in percentage format in Exhibit D for ease of interpretation. The event coefficients are also adjusted for the slight negative term in the regression.²⁰ All identified events and the “relevant” events (those events that relate to facts alleged by the Plaintiffs as shown with a non-zero weight) were each jointly significant at greater than the 99.9% confidence level, as shown in Exhibit D.

19. The t-statistics reported for the various event dates are based on the standard errors reported from the regression results (with zero drift assumed) in Exhibit D. For individual events, statistical significance will be set based on a t-statistic of 1.65 in absolute terms (a 90% confidence level using a two-tailed test, 95% confidence using a one-tailed test).^{21 22} Individual events that were not statistically significant should,

²⁰ The constant is a trend term. Where the trend is not constant over time, one cannot assume that the trend will continue in any definite direction on any given date. Furthermore, a trend (or drift) term would suggest that an investor in TeleTech would know and expect TeleTech to significantly underperform or outperform its peers and the Composite Index over time and is, therefore, inconsistent with an efficient market.

²¹ Numerous recognized texts emphasize that the criteria for statistical significance should specifically reflect the hypothesis and should be set based on the specific factual and policy concerns. See, for example, Lehman and Romano, *Testing Statistical Hypotheses*, Third Edition, 2005, pp. 57-58 (choice of threshold for statistical significance is “usually somewhat arbitrary” and “should take into account the power that the test will achieve”, “p-value should be reported as alternative, and choice of significance should be relaxed for tests with low power or when strong prior beliefs support conclusion”), and Lapin, *Statistics for Modern Business Decisions*, p. 186 (1978) (“A decision rule must be chosen that will provide a lower probability of the more serious error He [the decision-maker] should therefore be wary of setting Alpha [the criteria for significance] and Beta at arbitrary or traditional levels.”). A one-tailed test is appropriate whenever the question is whether the event caused a change in a hypothesized direction. In other words, one-tailed means a test for a change in one direction. A two-tailed, by contrast, is a test for a movement in either direction. In this case, the specific relevant events are hypothesized to have had specific directional effects on Goldman Sachs’s share price, causing losses on April 10 and April 11 and between April 23 and April 25, 2002, and causing an increase on April 26, 2002. See, for example, Kennedy, *A Guide to Econometrics*, Fifth Edition, 2003, pp. 70, 409; Berry and Lindgren, *Statistics: Theory and Methods*, pp. 423-427 (2d ed. 1996) (arguing against a fixed criteria for statistical significance and for considerations of practical significance); and Cassidy, *Using Econometrics*, pp. 129-138 (1981) (describes the setting of confidence levels at the 10% rejection rate and “One-sided tests should be used

nevertheless, remain in the regression results and affect the overall analysis because they are part of the entire event selection process.²³ Otherwise, the exclusion of such intervention variables may (slightly) alter (or bias) the statistical inferences.²⁴ Events that have a t-statistic of greater than one in absolute terms are viewed as “meaningful” in that these events improve the overall “information” in the study and, all else being equal,

whenever the researcher’s prior permit.”). An event with a t-statistic of 2.33 or greater in absolute terms is often considered “highly significant” at the 99% level, and an event with a t-statistic greater than 3.0 is often considered “extremely significant” or an “outlier” that is so significant its existence is rare absent some actual event and inconsistent with random noise derived from the normal distribution given the number of degrees of freedom.

²² It is also important to not become overly fixated on statistical significance as an all-or-nothing concept. Statistical significance has more than one meaning and is not a talismanic term. In addition to the texts cited in the immediately prior footnote, see Lehmann and Romano, *Testing Statistical Hypotheses*, Third Edition, 2005, pp. 57-58 (“The choice of a level of significance is somewhat arbitrary,...This is unfortunate, since the choice of significance levels should also take into consideration the power that the test will achieve against alternatives of interest.”); Alan Stuart, et al., *Kendall’s Advanced Theory of Statistics, Volume 2A: Classical Inference & The Linear Model*, p. 193 (6th ed. 1999) (“This numerical convenience [rule of thumb criteria for statistical significance] has persisted long beyond its hour of need.”); and Gilson & Black, *The Law and Finance of Corporate Acquisitions*, Second Edition, 1995, p. 223 (“Suppose that an event study fails to find a statistically significant result. That does not mean that the announcement being studied had no effect, nor even that the announcement was unimportant....Lawyers and policymakers sometimes treat the absence of a *significant* change as equivalent to *no change in value*. This is simply wrong.” (italics in original)). Findings of an absence of statistical significance in a given situation are not opinions on whether or not a causal relationship is more likely than not to have been present in that situation.

²³ Cassidy, *Using Econometrics*, pp. 252-253 (1981) discusses the problem with selectively deleting intervention variables that are insignificant from the analysis and discusses the use of collective (joint) tests for the inclusion of groups of intervention variables as a whole, rather than individual interventions. See, also, Kennedy, *A Guide to Econometrics*, Fifth Edition, 2003, p. 62, 254, 409, wherein he recommends using an F-test to test a group or set of dummy/intervention (time-series observations that are contaminated) variables for inclusion or exclusion in the regression when the variables are chosen *a priori* or as a set.

²⁴ This is an important issue taught in advanced statistics and econometrics courses but not often understood by researchers with less training. Removing events from the regression after estimation typically has an insignificant effect on the estimated coefficients and event effects but alters the statistical analysis and degrees of freedom after the fact, and, thus, will typically slightly bias the estimated rate of error and statistical inferences. While the effect is small, it is best to avoid the issue by not removing events identified *a priori* from the analysis just because they proved to be insignificant or not statistically meaningful after testing.

were more probable than not, given the prior selection process, to have had some impact on the price of TeleTech's shares.²⁵

20. Visual examination of the residuals from the event study analysis suggests that there were some extremely significant events not identified in the event search. The presence of such extreme events means that the t-statistics reported in Exhibits D are slightly understated and will, thus, slightly understate the statistical significance of individual events relative to the ideal or perfect model.²⁶

21. Specific events of interest include November 9, 2007 (when the Company disclosed an investigation into prior accounting for stock option expenses) and July 17, 2008 (after the Company disclosed the results of its investigation and restatement for prior improper accounting for stock option expenses). Teletech's share price fell 9.6% in absolute terms and 8.8% in relative terms (Exhibit D, event 102) on November 9, 2007. Even more significantly, Teletech's share price fell 25.9% in absolute terms and 26.2% in relative terms (Exhibit D, event 149) on July 17, 2008 at the end of the Class Period. These stock price declines were both extremely significant (absolute t-statistics of 5.38 and 13.62, respectively, for the stock price declines on November 9, 2007 and July 17,

²⁵ See, for example, Kennedy, *A Guide to Econometrics*, Fifth Edition, 2003, p. 409 ("It would be wiser to adopt a much smaller critical t value, say 1.0. For F-tests the p value is an easier guide; rather than a critical value of 0.05, a critical value of, say, 0.3 would be more suitable.") and p. 413 ("Testing for exclusion of independent variables should adopt a low critical t value (1.0 or less, for example, rather than the traditional 2.0) to minimize the influence of type II errors (i.e., to avoid omitting a relevant variable). In general, pre-testing of any kind should be conducted using a significance level much higher (say, 25%) than the traditional 5%.") See, also, Gilson & Black, *ibid.*, p. 223, and Cassidy, *ibid.*, pp. 252-253.

²⁶ See, for example, Aktas, de Bodt and Cousin, "Event Studies with a Contaminated Estimation Period," *Journal of Corporate Finance*, Vol. 13, 2007, pp. 129-145; and Jackson, Kline and Skinner, "The Impact of Non-Normality and Misspecification on Merger Event Studies," *International Journal of the Economics of Business*, Vol. 13:2, July 2006, pp. 247-264.

2008 as compared with t-statistic thresholds of 1.65 for statistical significance and 3.00 for extremely significant).

I declare under penalty of perjury under the laws of the State of Texas and the United States that the foregoing is true and correct. If called as a witness I could and would competently testify thereto.

Executed this 9th day of December 2009 at Dallas, Texas.

A handwritten signature in black ink, appearing to read "Scott D. Hakala". The signature is fluid and cursive, with the first name "Scott" and last name "Hakala" clearly legible. It is positioned above a horizontal line.

Scott D. Hakala, Ph.D., CFA